

REMARKS

The rejections of Claim 17 as being anticipated by JP '036 under 35 USC §102(b), of Claims 19-20 as being anticipated by JP '143 or Baba et al., of Claims 11 and 12 as being unpatentable over JP '228 in view of JP '036 under 35 USC §103(a), of Claims 14-16 as being unpatentable over JP '228 in view of either JP '143 or Baba et al. under 35 USC §103(a), of Claim 13 as being unpatentable over JP '228 in view of JP '036 and "design choice" under 35 USC §103(a), of Claim 18 as being unpatentable over Suzuki in view of "design choice" under 35 USC §103(a) and of Claim 21 as being unpatentable over JP '143 or Baba et al. in view of JP '228 under 35 USC §103(a) are traversed.

Reconsideration of each of these rejection is requested in light of the above new claims which are neither anticipated by JP '036, JP '143 or Baba or rendered obvious over any combination of the cited prior art. With respect to the "design choice" rejection, the U.S. Court of Appeals for the Federal Circuit has now made it abundantly clear that the PTO cannot fulfill its statutory objection under the Administrative Procedure Act by reliance upon such conclusory statements. See, In re Lee, 61 USPQ2d 1430 (Fed. Cir. 2002).

One aspect of the present invention is to provide a turbocharger radial bearing with a brass alloy in which an Mn-Si compound is crystallized in a brass base material, wherein Mn-Si compound is elongated needlelike in an axial direction of the rotary shaft and is dispersed. Thereby, a bearing structure having excellent abrasion resistance without generating a corrosion product is achieved even in a high-temperature oil environment, and a supercharger with

high durability results. Applicants discovered, as a result of abrasion resistance testing, that the direction of the Mn-Si compound crystallized in the alloy with respect to the sliding direction exerts a large influence on the abrasion resistance of the bearing material. Figure 6 shows that sliding perpendicular to the longitudinal direction of the Mn-Si compound achieves the most excellent results in abrasion resistance. The Mn-Si compound elongated needlelike in an axial direction of the rotary shaft in the present invention is based on Applicants' recognition.

None of the cited references recognized this or, in hypothetical combination, would have resulted in such bearings absent impermissible hindsight in which applicants' own teachings are used against them. For example, JP '143 teaches, e.g., a vehicle synchronizer ring or bearing, in which the brass alloy containing an Mn-Si compound is crystallized in a brass base material. A known Mn-Si intermetallic cpd.-dispersed brass contains dendritic Mn-Si particles which elongate along its rolling direction. JP '143 does not teach or suggest that the sliding direction of the bearing material must be matched with the direction of the Mn-Si compound. In fact, applicants submit that JP '143 teaches away from the present invention by denying the use of a needlelike Mn-Si compound elongated along its rolling direction and thereby making the best use of the specified direction of the Mn-Si compound under high temperature and high-speed environment. That is, JP '143 describes that the needlelike Mn-Si compound and its direction likely to have anisotropic properties that do not have the present invention's strength and toughness. To address

this, JP '143 makes the Mn-Si intermetallic compound particles "granular" by the addition of Ti and Fe, Ni. JP '143 never recognized or suggested that the abrasion resistance of a turbocharger used under high temperature and high-speed rotation condition can be substantially improved by a best match of the sliding direction of the bearing material with the direction of the Mn-Si compound.

The Baba et al. patent discloses only Cu-Zn alloy group in which Mn-Si compounds crystallized and are dispersed depending on the requirement for high strength and high abrasion resistance. The Mn-Si compound crystallizes out of the Cu-Al group alloy in a rod-like form, but in order to prevent decreasing of elongation of the alloy, it is preferable that the Mn-Si compound crystallizes in massive form and, then, the Mn-Si compound in massive form is refined (column 2, lines 26-31). The Baba et al. does not teach the use of a needlelike Mn-Si compound and making a best match of the specified direction of the Mn-Si compound.

No hypothetical combination of JP '143 and Baba et al. would have resulted in the present invention. This is true with or without one or more of the teachings of JP '036 or JP '228 which, at most, relate to a copper alloy in which Mn-Si compounds crystallizes and disperse but say nothing about the direction of the compound for optimizing abrasion resistance.


Accordingly, early and favorable action upon the new claims is earnestly solicited.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #381NT/50973).

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Respectfully submitted,



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